Evolving routines and strategic change. Learning in practice through knowledge and knowing in evolving routines.

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Résumé

Change is « the normal condition of organizational life », and routines and micro-practices are a source of continuous change. Routines can be analysed as an emergent source of change, but they also can be seen as constraint and emergent at the same time. The continuous evolution of routines and the continuous organizational by the evolving routines can be seen as a double process, change by constraint driving (for example strategy driving) or emergent that is to say day-to-day driving. In both cases, the new routines are obtained very often from the old ones. And very often, the two processes occur simultaneously. Thus, routines evolve through a double process, one of events solicitation, prescribed incitation to change or incitation perceived by the actors. We suggest taking as a metaphor the adaptation process of Piaget, composed of assimilation and accommodation to illustrate this double process. In that routines evolution, the interconnected evolution of knowledge and knowing is a key factor; we propose to use knowledge engineering methods to describe it.

Key words: Knowledge engineering, micro- practices, routines, and characterization.

Introduction

Change is « the normal condition of organizational life » (Tsoukas, Chia, 2002). To observe and analyse this continuous change of the organization is quite difficult, one promising way is to have interest for routines (Feldman, 2000) and micro- practices (Rouleau, 2005), (Jarzabkowski, 2003).

The « micro level » (Feldman, 2004) shows interest for processes which are not concerned by the whole organization, but that can be observed about a small part of its activity and some of the actors, in their day-to-day activity. This approach allows a synthesis view between « organizing » perspectives and « practice-based »ones. It uses the notions of routine and procedure that became well known in management science, for example, linked to the core competencies of the firm (Hamel et Prahalad, 1994). They are consistent with some theoretical foundations in economy through the evolutionary theory of economic change (Nelson et Winter, 1982).

We propose to use Feldman definitions (2000): « Routines are temporal structures that are often used as a way of accomplishing organizational work. » or more precisely « repeated patterns of behaviour that are bound by rules and customs and that do not change very much from one iteration to another » or (Feldman, 1995, p 6) « repeated actions carried out by two or more interdependent actors ». Thus, routines are defined as repeated procedures among the procedures that are the « standard operating procedures » allowing doing a task in the meaning of Cyert and March (1963).

The distinction between routines and procedures is then essentially due for Feldman to this feature of repeated action. Routines are that particular procedure: those, which are, repeated ones. That implies several consequences: there are the procedures which are applied without thinking to it, those which are call into question only border line and when problems occur, those which concretise the « path dependency »of the firm (Nelson et Winter, 1982). Evolutions and adaptations are nevertheless frequent as Feldman shows it, we shall discuss that point.

Routines can also be considered as the way the actors translate the procedure into activity, they put into acts what is organizationally planned to do. Procedures are explicit, of-

ten encoded and written, well known of the hierarchy. Thus, routines should be instantiations of procedures, they should be more « variables » than the procedures that may differ progressively from routines and micro- practices. However that distinction seems not stabilised among these different works and we have to notice that the two concepts are indifferently used.

More clearly, micro-practices are referring directly to the notions of routines and procedures in the frame of activity of the actors. For some authors, as Feldman they seems equivalent to routines and if the term of practice is used, even at a « micro » level, the particular qualification of micro-practices is not used.

For other authors (Rouleau, 2005), the term of micro-practices is used in a particular meaning. Rouleau (2005) situates the micro-practices at the individual level: « *All individuals put micro-practices of translation into action every day…* », routines at the organizational level and conversations at the social level (Rouleau, 2005, p. 1425). The routines that are an organizational feature are lived every day by people in a personal way, and that produce micro-practices. [(22], p. 1431: *« It appears that middle managers, through their tacit knowledge, strategize by enacting a set of micro-practices that are produced in each routine and conversation surrounding the change*. » or by the same author (Rouleau, 2005, p. 1432): «*all the routines and conversations examined combined synergistically the four micro-practices into arrangements of verbal and symbolic signs*». This author refers particularly to Giddens (Giddens, 1984)*:* «*In other words, these micro-practices were produced through routines and conversations as the result of mundane human competence in action »*

Jarzabkowski (2003) use also the concept of micro- practices. This author defines practices referring to activity theory (Vygotski, 1997) and the concrete activity context as an activity system (Engestrom, 1993). This view is consistent with that one that proposes to consider the organization as a set of activity systems (Blackler, 1993). In that perspective, this author considers that practices are mainly a link between actors, according the social and historic dimension of Vygotski. In that view, micro- practices are the way the actors « habit » organizational routines and made them evolve.

The greatest interest of considering routines is to allow linking organizing, practices and learning. The point is to enlighten precisely how the firm orientations are putting in day-

to-day acts and « how people are invested in the doing the real world», as Cook and Brown (1999) invited us to observe.

Doing so, the analyst focuses on an organizational processes granularity level, which include day-to-day actors' practices (Charlet et al, 2000). The routines granularity can be high: so that they include the description of several actors' activity during several months. But they can also be constituted of actors' activity during some minutes. Thus, the routines granularity is highly variable. Routines including routines, *«Within each of these routines there are multiples routines, and there is some variance in what is included in each of routines depending on who is describing them*. » (Feldman, 2000), several granularity levels can be implied in the same case.

Routines as well as practices are, at the same time, products of deliberated organizational activity and emergent processes, created by actors during their day-to-day work situations Feldman (1995, p. 613). Micro-practices evolving processes are also learning processes. They change as soon as they exist, in a day-to-day evolution, because situations differed every day (Feldman, 2000) and that actors have to adapt their behaviour continuously to do with these renewed situations. Actors simultaneously perceive changes in the world they live and modify their practices. Organizational decisions impulse also changes. Thus a double movement exist, that can be mainly emergent (bottom-up) or mainly a hierarchical change process (top-down). A double movement has been theorised as a learning process by Piaget.

We shall use in this paper the frame of that theory, only as a metaphor, because it is no evident to apply a theory about human intelligence to organizational learning. Piaget has showed that the permanent interaction between individual and the world permit to construct knowledge through a learning process called adaptation. This process is composed of a double process. assimilation and accommodation are the two complementary processes of adaptation, through which awareness of the outside world is internalised. Although one may predominate at any one moment, they are inseparable and exist in a dialectical relationship. In assimilation, what is perceived in the outside world is incorporated into the internal world, without changing the structure of that internal world, the pre-existent mental categories, those in use are maintained. In accommodation, the internal world has to accommodate itself to the evidence with which it is confronted and thus

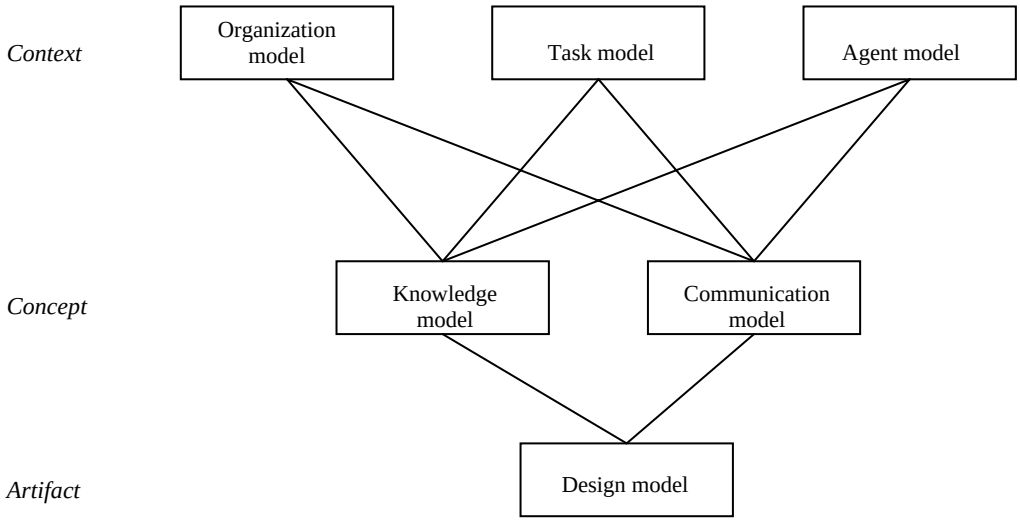
adapted to it; the organism has to change the schemas in use to fit the realities of external objects. Both are going on at the same time. Most of the time we are assimilating familiar material in the world around us, nevertheless, our minds have also to adjust to accommodate it. Both processes constitute the equilibration, which is the central concept of learning for Piaget. Tsoukas and Chia use the term “accommodate” in the same meaning but without referring to Piaget.

We have to pay attention to knowledge as a resource for routines when we are focusing on routines and learning processes. Knowledge engineering methods are useful to describe knowledge. Knowledge engineering does not focus on routines, but the notion of task may be compared to that one of routine. Knowledge engineering aims are to build concepts, tools and methods to model knowledge and develop software using knowledge and supporting user’ work (Charlet et al, 2000). Most of the time, the starting point is a synthetic activity description that is preliminary step for modelling.

KADS methodology concentrates a lot of works and debates in knowledge engineering in Europe during the ninety. This methodology is based on problem solving methods (Newell et Simon, 1972). It argues that it is built and not existing before modelling, and that models have to be constructed to be guidelines to the knowledge acquisition process. It argues that problem solving methods are various but not infinite and that we can recognize in very various using fields some generic problem solving methods that can be modelled and re-used in these different fields. Therefore, the aim of methodology is to build library of models.

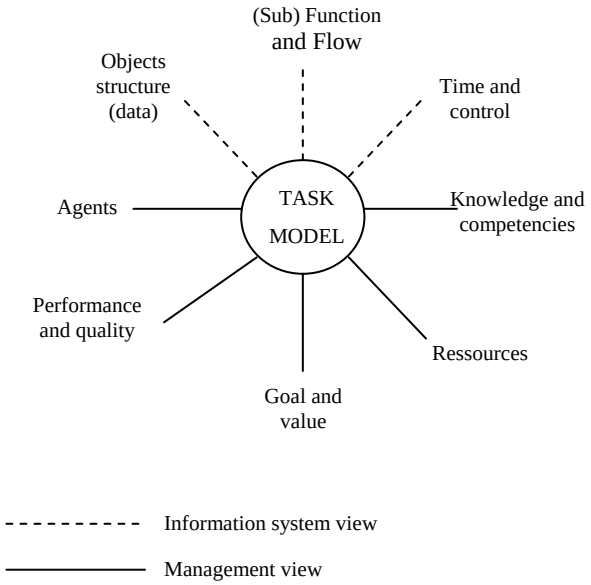
The set of routines studied by Feldman may be compared with two levels of the general model of the task in Kads (Fig. 1), but these descriptions of routines are not organised through models well identified and separated. This description by a discourse organised with concepts may be compared to the Kads models of organization, of the task, of the agent, of knowledge and of organization.

FIG. 1 – Situation *of organisation model and task model in KADS methodology*



The task model is composed in several views. Schreiber et al define it as following (Schreiber et al, 2000, p 45): « the notion of task, although important, has different connotations. As a commonsense concept, it is a human activity to achieve some purpose. In the above organizational study it has been viewed in the (not incompatible) sense of a well-defined subpart of a business process. The notion of task has also emerged as a crucial one in the theory and methodology of knowledge systems and of knowledge sharing and reuse. » Schreiber et al define the task so that it may make sense in the two fields (Fig. 2), in the one of modelling actors and in the one of practitioners. To do that, they define the task as a subpart of a business model presenting the following characteristics: it represents a goal-oriented activity adding value to the organization, it handles inputs and delivers desired outputs in a structured and controlled way, it consumes resources it requires and provides knowledge and competences, it is carried out according to given quality and performance criteria, it is performed by responsible and accountable agents.

FIG. 2 – *The generic task model in KADS methodology*



Observation of routines

To pay attention to practices, to identify and to give a title to the tasks or to the routines is an important starting point? It needs to distinguish among different actors' practices and among different knowledge. It's a first step which « distinguishes » an activity frame from a complicated organizational background, full of activity, alternate exchanges that implies several set of actors which are not all concerned with the studied routine. It. constitutes for itself a step of analysis and design, which need observations, methods and interpretation. This step is common to an identification of routines and to the modelling of problem solving methods as it is done in knowledge engineering. We propose to call that step characterisation; we shall discuss that point further.

We shall study the routines evolution in the work practices of a scientific journal editing board. We shall do this description with several composites: in terms of routines, in terms of characterisation, then by adding some modelling elements to pay attention to knowledge.

Methods

Describing routines in the practice of management of a students residence halls: budgeting for maintenance, hiring, training the student staff, moving students at the beginning of the year and closing the residence halls, Feldman use for identifying routines the formulation proposed by the concerned actors. (Feldman, 2000, p. 614) *« Organizational members identified five routines for me* ». That way of routines identification is close to the actors sense making, it is consistent with the ethnomethodologic approach which found this author method (among four meta-theories) (Feldman 1995, p.4) « *Ethnomethodologists look for processes by which people make sense of their interactions and the institutions through which they live* ». We will not discuss that theoretical point in this paper.

Routines description is done through a short story about actors' activity and some characteristics as incomes, outcomes, and used resources. By the routine process, actors transform incomes in outcomes. Among different resources for the routine: actors, activities, knowledge, knowing and others routines. We propose here, to extend this approach by discussing the qualification of knowledge. In fact, knowledge seems to us a main resource that can be extended by artefacts, that can permit to determine routines types, and that permit to link routines and competencies.

Data gathering

We have observed the editorial board during two years, about twenty day meetings, and forty individuals interviews of two hours.

Data analysing

Organizational setting

This scientific journal is a french language journal, it is publishing papers of a various and distributed scientific community, and animate that community. The main processes that we have distinguished in the editing board practices and that we suggest, as routines are the following:

1. Selecting scientific papers by peers review process

2. Management of a texts set
3. Issue composition

These three processes are massively overlapped and interacting together. The main process is the Peer review process" as, described by Rowland(2002) according a lot of authors "…*the four main functions of the scholarly literature are dissemination of current knowledge, archiving of the canonical knowledge base, quality control of published information and assignment of priority and credit for authors*."

Each of these three main activities is made of a set of plus or less coordinated and well-arranged processes. We shall describe four routines, included in the first and the third global routine, propose a characterisation and study how these routines are changing.

Description of routines

In the peer review process routine, we focus on two evolving routines: the routine Henry, assignment of a rapporteur and the routine Kathy: special instructions to reviewers.

In the global routine issue composition, we focus on two evolving routines: the summary composition and the evolution of book reviews.

The peer review routine.

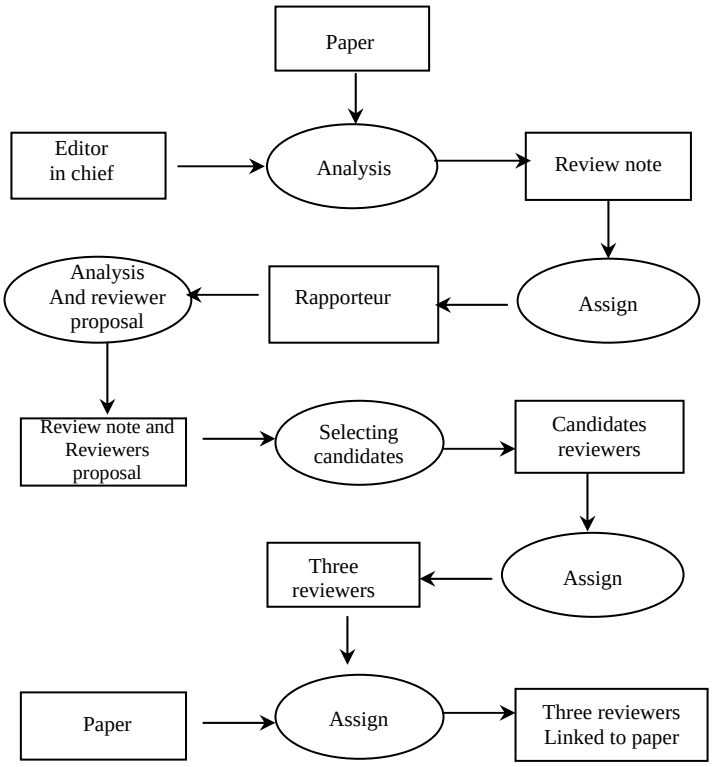
In the peer review process, we can distinguish the following routines in the editing board practices that we have observed:

- Assign a rapporteur
- Assign three reviewers
- Received review notes, evaluate them, synthesize them, prepare the collective decision by a synthesized rapporteur note
- Made an editing board decision about the paper
- Change notifications to author
- Evaluate the Vn+1 / Vn evolution and the remarks integration or not, in a short loop managed by the rapporteur or in a long loop with back review by one or two reviewers.

To characterize rapidly this process with few words, we can say that it is an activity of selecting papers for publishing. The process goes on several steps: a rapporteur manage the individual paper curs us, several reviewers are selected among a population and an assignment paper/reviewers is done. Reviewer's notifications are collectively validated and legitimated by the editing board. The peer review process is a core activity in scientific activity. Beyond the notion of selection, it's a complex way to influence scientific production and partly a co-construction of results, because the notifications addressed to the authors largely contribute to the direct elaboration of the paper.

We shall represent the process of reviewer's assignment in terms of tasks. At the beginning of this process, the assignment of a rapporteur. The process of reviewer's assignment to a paper is the task of assignment in the Kads library. It consists in pairing two objects belonging at two different sets. The goal of the task is to create the relation between a paper and three reviewers. Two main notions of that model are the notion of resource and the notion of assignment. The resource of the task is a set of reviewers, they are a resource fro the editing board. The assignment process allocates three reviewers to a paper. Inputs are the set of papers presented by the editor in chief, the set of possible reviewers as known by the editing board, the sub-set of reviewers proposed by the rapporteur. Outputs are the set of pairs reviewers / paper. The figure 3 is quoted from the generic schema proposed by Schreiber and al for the task of assignment (2000, p 158).

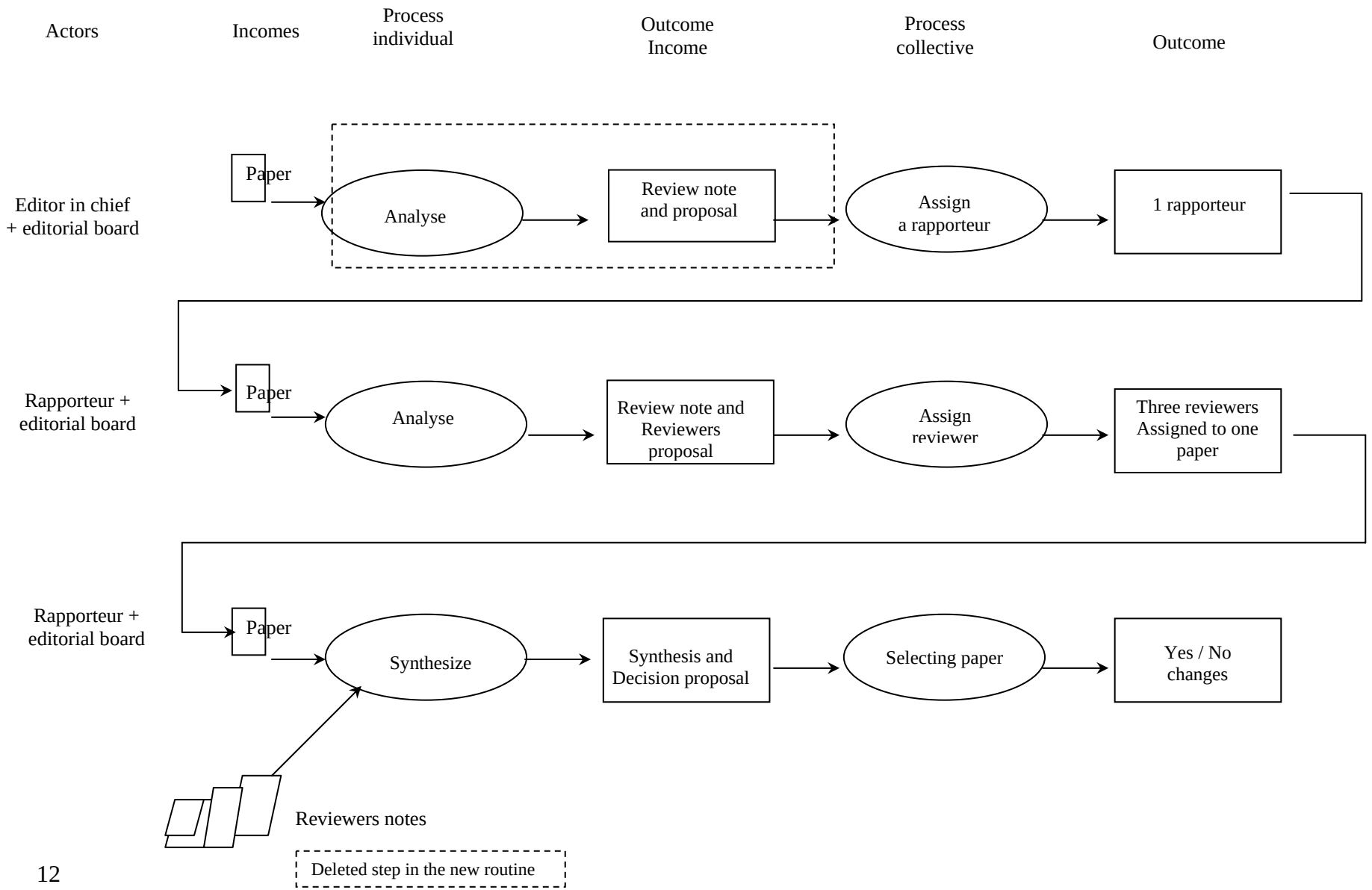
FIG. 3 – *Modelling the reviewer's assignment to a paper.*



Among a set of papers, a sub-set is determined that can be assigned to reviewers. It is affected to the papers set being allocated; a paper is extracted from this set. Then a resource constituted of a sub-set of three reviewers is allocated to this paper.

In order to produce a synthetic representation, at the same time in terms of task and in terms of routine, we propose the following schema. That schema represents incomes, outcomes and processes, at a higher granularity than in a task model.

FIG 4 - *Organizing the peer review process, as a routine and as set of tasks.*



Evolving routine Henry Assignment of a rapporteur.

The routine assignment of a rapporteur, first step of the papers' selection has evolved during our observation period with the opportunity of a particular situation: several papers were received the day before the editorial board meeting. The board secretary was on vacation. To gain time, two editors in chief propose to assign a rapporteur without an editor reading note, represented on figure 4, that means delete the first step and the resource "paper" is directly used par the process editorial board meeting. When the new routine was used, it was applied on 2/3 papers, the others needing a detailed analysis and presentation to be allocated. The new routine was maintained and used in the same way: only for a part of the set of papers, and only when time was missing.

The competition between scientific journals, the evolving publishing medium and the financial challenge to maintained a journal lead to strategic pressure on the editorial board to shorten the cycle submission - publishing. That pressure forced itself upon the editorial board members, but they don't mentioned it. With this pressure background an opportunity came: the reception of a lot of papers during the secretary vacations.

The assimilation of the dictate « shorten the cycle» and the accommodation of the routine assign of a rapporteur, produce the adaptation of the editorial board and the change of the organizational routine. The external events are the pressure and the opportunity. The redactors' knowing permit the routine to evolve.

Considering the collective task, one may think that two main processes of knowing occur together: the classification among typicality of the paper, and the fit of assignment. When the collective task develops without redactor-in-chief presentation, these two knowing processes have to develop with fuzzy resources. The task is no more to validate or to modify the editor-in-chief proposal, all participants have to do their best to have a point of the view on the type of the paper, and to propose reviewers names without any helping external artefact. There is no more the medium of an individual analysis. The group, then is reduced to evaluating from elements coming from the author: title, abstract, key words and to a quick visual glance through the paper that the editor-in-chief do directly during the meeting: structure of the paper, some remarks (« there are a lot of sche-

mas or maps about ….), some bibliographical references for enlightening title and key words. Thus, considering collective activity, we could say the structure itself of the pre-existing task is modified, so that the changing process is accommodation.

Considering the organizational process, without decomposing the collective task; one can consider that only a step is delete. And that the process is only a kind of assimilation because the routine is shorter but not really new.

Evolving routine Kathy: special instruction to reviewers

The routine consisting in special instructions to authors was proposed by a redactor named Kathy. She proposes to have a special demand for the reviewers for a special she was involved in. Kathy was rapporteur of a paper, she can't imagine to accept the paper as it was presently: the paper was too limited, too describing a case and without detachment and referring similar works. But the paper was an interesting one by the deep and intelligent analysis of a case. The task of Kathy, as rapporteur was: to reject the paper or to propose reviewers' name to editorial board. In that situation, she proposed to the editing board to demand, exceptionally to the reviewers, to read the paper, thinking to a broadening of perspective and to ask in their reviews to broaden the approach and to refer to similar works. That orientation of review was judged unacceptable by the whole editing board. The debate was active; Kathy was opposite to the rest of editing board. What was in discussion was the respective role of rapporteur and reviewer. Kathy does not understand why, as rapporteur she can't give to reviewers, a simple idea of broadening, let them do what they wish with it. In her mind, that was a simply and limited modification of the collaboration between rapporteur and rewievers. For her, it was as saying: I have read this paper as rapporteur, I think that it presents a lack of opening view and ask you to be careful to that point in reading it, and if you agree, to make suggestion to the author in that sense. For the editing board, there was no doubt that, from a deontological point of view, it was impossible to give any particular instruction for a paper review. The instruction to reviewers may be only from a general point of view (of scientific analysis) and from orientation of the journal (scope, kind of methods, of data presentation and so on)

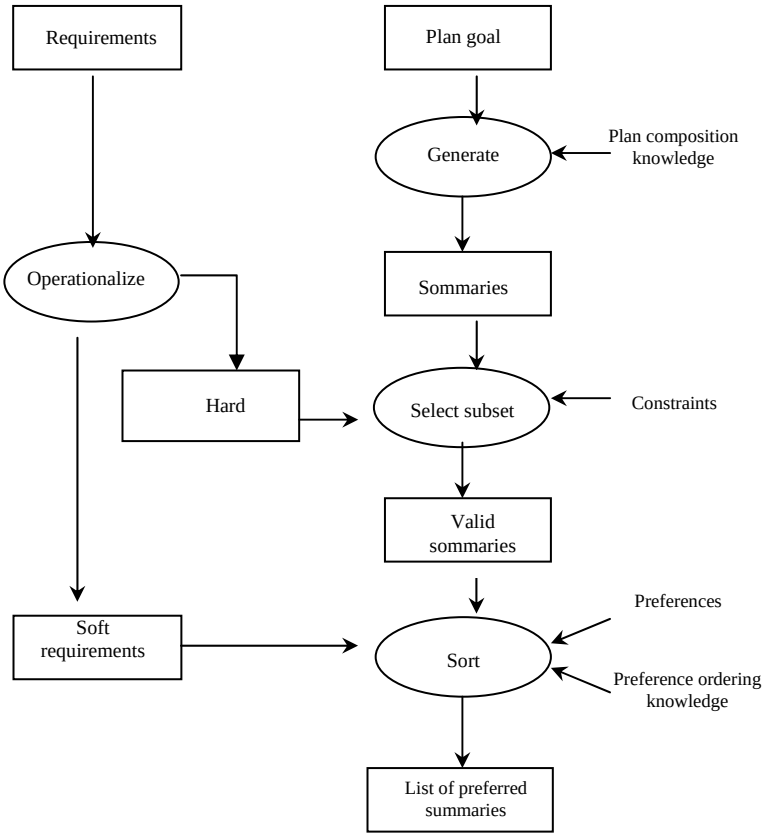
Evolving routine: issue composition

The process of issue composition is a process of classification and selecting papers, from a set of papers, The aim of attributing a paper to an issue is build on several months. So that the building of summary issue is not starting from a white page. It is an iterative process lying on six months and which entered in a finalised step, a month before publishing.

Characterising this issue composition activity: the aim of the activity is to compose a document including several texts, the juxtaposition of these texts is corresponding on one hand to a formal and stable structure that determine a sequenced texts following their nature and on the other hand to a logic of content of dossier that is evolving for each issue. That composition is an iterative process on several months.

The issue composition process, in terms of tasks, and following the library of the Kads method KADS is a task of planning (Schreiber et al, 2000, p 159). The goal is to generate an arranged texts list. The main concepts are the list as goal, the actions of generate and the list as starting object. The inputs are the issue definition, a summary type, and the candidate papers. The output is the constituted summary. The characteristics of the task are to actions or entities, the qualification of « planning » as a general meaning. Figure 5 is designed, following the generic schema of planning in Kads method (Schreiber et al, 2000, p 160) and describe this issue composition process.

FIG. 5 – *Modelling the summary issue journal design*



Two kinds of requirements exist: hard requirements or constraints and soft requirements or preferences. The constraints are the text nature: editorial or book review or scientific paper. The preferences are more flexible, they are fixed by the editorial board, for example the theme of the papers will be various, so that different subscribers will find an interest in the issue, or in the contrary several papers on a similar theme will give several enlightening of a theme. The difficulty is from adding all the constraints which have effects partially contradictory, for example with that editorial relating that scientific event, it will be interesting to select that paper A, but it is in concurrence with the paper B that have been accepted before.

The proposed evolution by several members of the editing board was to accept to change the arrangement of the headings in the summary, following the demand of a guest

editor. The guest editor asked to keep the same headings but to change their arrangement, to follow logic of content of the special issue and not the logic of the journal structure. In terms of representation of task, on the Fig 5, the discussed constraint was that one which ponder the selecting process. The hard requirements that specify the generic summary with sequenced headings is not took up by the editing board.

Evolving routine: column Book reviews

The column Book review design had some problem several months ago; the column perspective is in question. Books received from publishers are increasingly higher. The editing board is evolving in its waiting, it does not exactly what kind of book comments it is waiting for, thus several time, the comments it received was disappointing. Several points of view were examined from the "objective» abstracts of books received form the publishers, to an academic evaluation and debate of some chosen books. To whom ask the summary or position analysis? To volunteers? To editing board? To reviewers set? For which books? Those received from publishers? Those selected by the editing board because they are important for the community? Those for which somebody proposes a review? The subscribers and mainly the contributors seem to be interested not by abstracts but by notes "a point of view on…» At the end, the editing board decided that the heading « Book review » would become « Book in debate ».

Six months later, most of ambiguities around this heading are still there. And, the delays of publishing the books reports are too long, to still interest subscribers. The heading evolves one more time. Books evaluate as main ones by the editing board will be attribute to reviewers and the book review will be publish in the printed journal, with a global aim to do faster. Books received from publishers, will be let proposed during the editing board, if a volunteer ask the book, it will be entrust the volunteer with the task of review it, and that if the review come back (without management of the editing board), it will be publish on the website.

The editing board knowledge that can be considered as an assimilation of context elements are that to maintain a scientific journal alive and to animate a community life with it, it is necessary to inform that community of events that are pertinent for it. That has to

be done in a shorter and shorter delay. And to inform is no more sufficient, information has to be insert in debate, the journal have to propose interpretations. .

The first change of routine is done by accommodation, the routine change because the instructions to book reviewer change, the outcome change: the written note is not of same kind than previously, and editors in chief do not evaluate it in the same way.

Six months later, the second accommodation consists in making two kinds of book reviews and to have a routine for each kind of book.

Discussion

We shall not discuss here the learning theory of Piaget, particularly of the under estimation of the social relations and language role that Vygostky himself pointed out. As we said it before, we used the Piaget theory as a metaphor.

New routines are built from the old ones

The point we try to enlighten and that we shall discuss here, is just a point about evolution in terms of complex process with double loop and not in terms of pure emergence. .

Speaking of assimilation, we tend to think an information transfer and we may think that it concerns knowledge and not knowing. But it is the difficulty of formulates knowing, which may leads to this interpretation. A competence of the editing board is to understand and to interpret the professional evolution; it is also a kind of knowing. That seems to be acceptable for a delay submit / publish, three years ago is not actually. But this reason is not clearly formulate by the editing board. It seems to be evidence that we have to do that. In fact, there is a confuse situation perception and a confuse situation evaluation, that leads to change routine. Thus we cannot consider that assimilation would concern knowledge and that accommodation would concern knowing. The two processes assimilation and accommodation concern at the same time knowledge and knowing. Both are of different kind and evolving their own way, but interacting (Cook and Brown, 1999).

Knowledge are knowing resources for routines

It is not easy to distinguish knowledge and knowing, but it is interesting to try it, because n their interaction lies a source of learning (Cook and Brown, 1999). In the case study of editing board what are they using as knowledge, for example in the routine « selecting papers »? First if all, knowledge of scientific domain and of the whole set of works and publications. Together a set of authors linked to the set of publications with a lot of knowledge about authors (works in succession for each author, membership of a stream of thinking, used methods, and so on). At the end operating knowledge about routines, here about the rapporteur role (respective role of the rapporteur and of redactor-in-chief regarding the authors), evaluating the knowledge that the candidates rapporteurs may have of the various set of reviewers. That leads to built a list of candidates rapporteurs, more restricted, more specific and more operating than the list of a set authors-publications). These different knowledge are resources for the assignment knowing, and both are resources for the routine.

To illustrate the difference between knowledge and knowing, knowledge can be partly explicit and represented in software. To illustrate that point, in relation with routine « to assign a reviewer », we can quote the design if a tool (Bourigault) which is studied for the editing board that we have studied. This tool generates automatically a concepts set from the texts corpus of an author. A sub-set of these main concepts set permit to obtain a reviewer « profile ». The concepts are not proposed by the authors or by the redaction, or by the website, but generate automatically from the full-texts. When a new paper arrives, a set of concepts is generated and « describe » that paper, it is compared to the reviewers PROFIL, and a list of candidate reviewers is deduced. Thus the knowledge of a set of authors / texts, we had evoked before is partly represented in software, and is support and resource for the knowing of reviewer assignment that consist to choose among the names proposed by the list or out of this list.

The knowing in this routine consist in choosing the type of the paper, in the selection of candidates reviewers and mainly the « fit » that permit the pairing off the both.

Micro-practices leads actors to propose candidates routines

Micro-practices are a way to make routines and professional know-how evolve, they are also a resource for routines. Micro-practices interact with routines and permit us to analyse « a generative dance » between individual and collective practices. The notions of professional genre and of personal style proposed by Clot, using Vygostki concepts and theory, describe the same process of social activity formation, combining written rules and not written rules. Following Clot when an actor masters the professional genre, he begins to develop a personal style. The personal style makes the professional gender evolve. Reciprocally an actor may develop the personal style only he masters the genre. Both are maintained and evolve through collectives conversations about gender, which permit at the same time its transmission and its evolution by an individual and collective reflexive work, about how to act day-to-day the gender.

Thus, the proposal of Kathy to made the routine « particular instructions to the reviewers » evolve, may be seen as a personal way to do that is proposed to made the collective way evolve. Kathy proposes her own style but she did not succeeded to make the professional genre evolve. To made the professional genre evolve, it is necessary to convince the others members of the group. Actors propose candidate routines, which represent their personal practice to become an organizational routine; but to succeed in that transformation, they have to be shared. Thus, by this process micro-practices, as individuals' process made routines, as organizational process evolve.

The characterisation

We think that the process of characterisation is an essential step for organizational learning and for knowledge engineering. It seems to be a junction point between the two approaches. In the process of characterisation, the analyst chooses immediately a level of analysis, without apparent difficulty, as if the granularity imposes itself, that is that Goffman (1991) calls « that occurs here and now », that may correspond to the notion of « base level » used by Rosch. Actors know to call a routine, but they do not know to characterize activity.

The characterisation of processes and of knowledge consists in describing them in generic terms, without using a formalized method. Thus, this characterisation is a synthetic formulation, in day-to-day language, describing with the professional notions. The characterisation is situated to the « knowledge level ». To characterize the activity that we wish to observe or to model, is to pick it up from the other activities, to distinguish it, that the actors does not need to do.

It is also a way of making categories among observed organizational processes. That allows making the hypothesis that these processes are belonging to process types or to process type families. Following that way, we can make a second hypothesis: if these types exist, they can be found in various organisations and professional activities. We are referring, here, to the categorisation theory (Rosch, 1978) and to the notion of models library in the problem solving methods (Wielinga, 1992). Characterisation is thus a kind of descriptive vignette attribute to the observed activity, a sort of « type » of practice.

Characterisation is a preliminary step to the steps, which are producing detailed and formalized descriptions; the matter is just to know of what we are speaking of. That do appears immediately in the dialogue with actors or through practices observations. Characterisation implies interpretation and commitment of the observer, and it represents a possible orientation for the later development of work.

The knowledge engineering methods focus on further steps, more formal and more analytic ones and which distinguish knowledge, tasks, and communications. But some authors mention that step (Schreiber et al, 2000), (Aussenac-Gilles, 2005). And the notion of characterisation is used in fact. Thus in (Schreiber et al, 2000, p. 129) the concept is used and appears as a title to speak of the action, done on a task, nevertheless, the term of characterisation does not appear in the bright index of the book.

Schreiber and al consider three steps in the knowledge modelization process (Schreiber et al, 2000, p. 169): the step of identification which consists in a familiarisation and a first task models inventory, the step of specification which complete the set of knowledge and inferences concerned by the software, the step of refinement which consists in detailing the used models for the development, and to pair them off with use scenarios and to begin simulations. For us, the step of characterisation belongs to the first step.

The characterisation of processes may be applied at different levels, first of all at the global level of organizational activity, then at different included processes. Until the characterisation of cognitive processes then it joints the tasks and inferences models library of KADS.

Cognitivism and practice-based

The two ways of describing knowledge, learning and organizational processes, through organization science methods and knowledge engineering methods may be complementary, there may join in the step of characterization. In organization science, a certain discourse variation is permitted in describing practices. In knowledge engineering a unique description is researched, because it is thought as avoiding misunderstandings that is necessary to develop software.

We have only used the European knowledge engineering stream that differs the US one (Menzies and Van Harmelen, 1999) and which are founded on problem solving method (Wielinga, 1992). Our point of view does not include all the knowledge engineering methods.

One may see a certain contradictory to use methods founded on a cognitivist perspective and others founded on a practice-based perspective. But the use of these methods are complementary, as we have shown it in this paper and as others authors like Carlile (2002) have already done. It can be done, being careful of not detached abstractions from a deep practices analysis: « *Abstractions detached from practice distort or obscure intricacies of that practice* » (Brown and Duguid, 1991)

Conclusion

We have shown that new routines are built from the old ones, that actors accommodate there gradually to new events and integrate there in their practices. We have shown that knowledge and knowing are resources for routines, and that the actors' micro-practices lead them to propose candidate routines that succeeded or failed.

To do that sort of analysis and to describe the new structure and the old one of the evolving routine, a task modelling is useful. It is interesting to do this task representation using PSM to enlighten knowledge and knowing. In this approach of representing tasks and routines, we distinguish a common step that we call characterisation. Thus, we are showing that some cognitivism methods may be used in a global and practice-based analysis.

Acknowledgments

This work was supported by the T-CAN (Knowledge treatments, learning and new technologies) program of CNRS and was a part of the project ACTMUT: Access to the Texts and Mutation of Techniques.

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